A Perspective on Unconventional Monetary Policy

Macro Workshop 2014
Central Bank of Turkey
Istanbul, Turkey
June 2, 2014

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The views I express here are my own and do not necessarily reflect the views of the Federal Reserve Bank of Chicago, my colleagues on the Federal Open Market Committee (FOMC) or within the Federal Reserve System.
Three Big Events in Fed History

■ The Great Depression (1929-1938)
  – “Inept monetary policy” failed to adequately combat credit contraction, deflation, and depression

■ The Great Inflation (1965-1980)
  – Monetary policy failed to recognize structural changes and expectational dynamics that led to double-digit inflation

■ The Treasury Accord (1951)
  – An example highlighting the importance of central bank independence
Academic Foundations of Modern Central Banking

- **Great Depression: Central banks must address nominal crises**
  - Friedman and Schwartz (1963)
  - Bernanke (1983, 1985)

- **Great Inflation: Central banks must distinguish real from nominal cycles**
  - Friedman (1968)
  - Lucas (1972)
  - Kydland and Prescott (1982)

- **Central bank independence: Central banks must be able to act as necessary**
  - Kydland and Prescott (1977)
  - Barro and Gordon (1983)
  - Rogoff (1985)
Long-Run Strategy for Monetary Policy
(January 2012, reaffirmed thereafter every January)

- $\pi^* = 2\%$ PCE inflation

- $u_t^n \sim 5.2\% - 5.6\%$ time-varying
  - Central tendency of long-run sustainable level from the Summary of Economic Projections (SEP)

- Balanced approach to reducing deviations of inflation and employment from long-run objectives
Persistently Low Inflation and Wage Growth

**Total PCE Price Index**

- **Average PCE Inflation (2000-2007): 2.3%**
- **Dec. 2007**
- **2% Price-Line from December 2007**
- **Path Implied by FOMC Inflation Forecasts**

**Wage and Compensation Growth**

- **Average Hourly Earnings**
- **Employment Cost Index**
- **3.5% = 1.5% productivity growth + 2% inflation**

Source: Inflation forecasts are from the March 19, 2014 FOMC Summary of Economic Projections
Inflation is Low Globally

Consumer Inflation
(year-over-year percent change, deviation from target)

Consumer inflation in the U.S. is as measured by the total price index for Personal Consumption Expenditures; in other countries, it is measured by the Consumer Price Index. Latest data are year-over-year changes in the most recently published monthly price index.
Bull’s-Eye Accountability for Fed’s Dual Mandate

Loss Function (percent)

\[ L = (\pi - \pi^*)^2 + 0.25(y - y^*)^2 \]

\[ L = (\pi - 2)^2 + (u - u^n)^2 \]

2014 – 2016 values are midpoints of FOMC participants’ Summary of Economic Projections as of March 19, 2014.
Bull’s-Eye Accountability for Fed’s Dual Mandate

Loss Function

\[ L = (\pi - 2)^2 + (u - u^n)^2 \]

Inflation

\( \pi = 3.8\% \)

Unemployment

\( u = 7.2\% \)

2014 – 2016 values are midpoints of FOMC participants’ Summary of Economic Projections as of March 19, 2014.
Bull’s-Eye Accountability for Fed’s Dual Mandate

Loss Function
\( L = (\pi - 2)^2 + (u - u^n)^2 \)
\( L = 2(\pi - 2)^2 + (u - u^n)^2 \)

\( \pi = 3.0\% \)
\( u = 7.3\% \)

2014 – 2016 values are midpoints of FOMC participants’ Summary of Economic Projections as of March 19, 2014.
Why Has Achieving Dual Mandate Been So Hard?

- Deleveraging in the aftermath of the financial crisis
- Global risks
- Unusually restrictive fiscal policy
- Monetary policy constrained by zero lower bound
In the period prior to the explicit inflation target set by the FOMC, the Taylor Rule is constructed using long-run inflation forecasts from the Survey of Professional Forecasters, or when available, from the Summary of Economic Projections. After 2012, the Taylor Rule is constructed using the FOMC’s 2 percent long-run inflation target.
Policy Tools at the Zero Lower Bound

- Constrained optimal policy approach (Taylor 1979)

- Three ways to approximate optimal policy at the ZLB
  - State-contingent price level targeting
  - LSAPs
  - Forward guidance and inertial policy rule

Federal Funds Rate
(percent)

Taylor Rules:
\[ R_t = 2.0 + \pi_t + 0.5(\pi_t - 2) + \alpha \text{ gap}_t \]

Taylor 1999: \( \alpha = 1.0 \)
Taylor 1993: \( \alpha = 0.5 \)

Optimal Control:
\[ \text{Min} \ (\pi_t - 2)^2 + (u_t - u^*)^2 + \Delta R_t^2 \]

Progress toward the Dual Mandate Goals with Alternative Policies—Yellen (2012)

Unemployment Rate
(percent)

PCE Inflation
(4-quarter percent change)

Core PCE Price Index
(Index, 2005 = 100)

Source: Core PCE data are from the Bureau of Economic Analysis. Inflation forecasts are from the June 2010 FOMC Summary of Economic Projections.

Core PCE Price Index and Inflation
(Index, 2005 = 100, Q4/Q4 inflation)

Source: Core PCE data are from the Bureau of Economic Analysis. Inflation forecasts are from the June 2010 FOMC Summary of Economic Projections.
LSAP Effects on Long-Term Interest Rates

- Wide range of estimates regarding the effect of LSAP on Treasury rates through:
  - Portfolio balance effect on term premia
    - Reasonable estimate is $500 billion of LSAP worth about 25 bps on 10-year Treasury rates
  - Signaling effect on expected future short-term rates
Forward Guidance – Numerical Thresholds (December 2012)

Unemployment Rate

<table>
<thead>
<tr>
<th>Year</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
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</thead>
<tbody>
<tr>
<td>Rate</td>
<td>9.0</td>
<td>8.0</td>
<td>7.0</td>
<td>6.0</td>
<td>5.0</td>
<td>4.0</td>
<td>3.0</td>
<td>2.0</td>
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</table>

PCE Inflation

<table>
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<tr>
<th>Year</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate</td>
<td>4.0</td>
<td>3.5</td>
<td>3.0</td>
<td>2.5</td>
<td>2.0</td>
<td>1.5</td>
<td>1.0</td>
<td>0.5</td>
</tr>
</tbody>
</table>

2013 Taper Tantrum - Forward Guidance, LSAPs, and Signaling

Fed Funds Rate (percent)

Central Tendency of FOMC Long-Run Projections

Key Events:
May 22: Chairman Bernanke’s testimony before the Joint Economic Committee, U.S. Congress
June 18-19: FOMC meeting & press conference
September 17-18: FOMC meeting & press conference

History

2012  '13  '14  '15  '16  '17

May 21  June 18  Sep. 10  Sep. 19
Balance Sheet Normalization

Projected SOMA Holdings
(Billions of dollars)

2016 Q4 (FOMC SEP):
\[ \pi = 1.85\% \]
\[ u = 5.4\% \]

Baseline SOMA projections based on primary dealer expectations. Counterfactual scenario assumes the use of only conventional monetary policy tools (Treasury bond purchases at roughly the rate of growth of currency in circulation). Buy-and-Hold scenario assumes no asset sales. Date of projection given in parentheses (end of year).
FG and FOMC “Appropriate” Policy Rates

**Taylor '93:**
\[ 2 + \pi_t + 0.5 (\pi_t - 2) + (u^n_t - u_t) \]

**Inertial Taylor '99:**
\[ 0.8 I_{t-1} + 0.2 [2 + \pi_t + 0.5(\pi_t - 2) + 2(u^n_t - u_t)] \]

*Market Expectations*

Source: Interest rate forecasts are from the March 19, 2014 FOMC Summary of Economic Projections. Market expectations are from OIS futures as of May 29, 2014.
Additional Topics

- Monetary Policy and Financial Stability Risks
- Exit Principles
Tensions from low interest rates
  – Highly accommodative MP appropriate at ZLB to obtain $(u^n, \pi^*)$.
  – But such policy can encourage additional risk taking

Degrading MP tools to mitigate financial instability risks would lead to inflation below target and additional resource slack

In order to avoid excess risk-taking, use combination of supervisory oversight, macro-prudential tools (separate from MP tools), and market discipline
Looking Ahead: Policy Normalization

- At some point, achievement of bulls-eye ($u^n, \pi^*$) will dictate higher interest rates

- Need to make sure we can raise short-term market interest rates in the presence of a large balance sheet

- New tools to tighten linkages to market rates
  - IOER, ON RRP, TDF

- These are operational issues the in first stages of monetary policy transmission mechanism
  - No change in transmission from short rates to long rates, asset prices, etc.